

67,200-617
2001-0036

CLAIMS

What Is Claimed Is:

1. An apparatus for detecting a liquid leak from a fluid vessel comprising:

a pair of electrical conductors located in relative proximity to said fluid vessel, said pair of electrical conductors comprising at least one insulated conductor characterized by an electrically insulative, porous sheath; and

circuitry coupled to said electrical conductors effective to measure a resistance of the combination of the pair of electrical conductors and an electrical short there between caused by said liquid leak, whereby the resistance indicates the existence of a leak and the relative location of the leak along said at least one insulated electrical conductor.

2. The apparatus as claimed in claim 1 further comprising a drip tray wherein said at least one insulated conductor resides.

67,200-617
2001-0036

3. The apparatus as claimed in claim 2 wherein said pair of electrical conductors comprises a second insulated conductor characterized by an electrically insulative, porous sheath, said pair of electrical conductors being in parallel adjacency.

4. The apparatus as claimed in claim 2 wherein said pair of electrical conductors comprises said drip tray.

5. The apparatus as claimed in claim 3 wherein said pair of electrical conductors comprises individually insulated conductors.

6. The apparatus as claimed in claim 3 wherein said pair of electrical conductors comprises integrally insulated conductors.

7. The apparatus as claimed in claim 1 wherein the circuitry comprises an ohmmeter.

8. The apparatus as claimed in claim 1 wherein the circuitry comprises a voltage source and a current sensing circuit.

67,200-617
2001-0036

9. The apparatus as claimed in claim 1 wherein the circuitry comprises a current source and a voltage sensing circuit.

10. The apparatus as claimed in claim one wherein the said at least one insulated conductor comprises a chemically treated insulator which changes color when contacted by liquid, whereby leak existence and location may be discerned visually.

11. The apparatus as claimed in claim 10 wherein the insulator is chemically treated with copper sulfate.

12. The apparatus as claimed in claim 10 wherein said at least one insulated conductor comprises nichrome.

13. A method for determining existence and location of a fluid leak from a vessel comprising:

providing a pair of electrical conductors in proximity to said vessel, at least one of said pair of electrical conductors being elongate and having a sheath comprising an electrically insulative, porous material;

67,200-617
2001-0036

determining a resistance between said at least one of said pair of electrical conductors and said other electrical conductor; and

relating said resistance to one of a normal condition corresponding to the absence of a fluid induced electrical short between said pair of electrical conductors or a leak condition corresponding to the presence of a fluid induced electrical short between said pair of electrical conductors, and further relating said resistance corresponding to a leak condition to a location along the at least one of said pair of electrical conductors.

14. The method as claimed in claim 13 wherein both of said pair of electrical conductors comprise elongate conductors having a sheath comprising an electrically insulative, porous material.

15. The method as claimed in claim 13 wherein the step of determining a resistance between said at least one of said pair of electrical conductors and said other electrical conductor includes measuring a resistance with an ohmmeter.

67,200-617
2001-0036

16. The method as claimed in claim 13 wherein the step of determining a resistance between said at least one of said pair of electrical conductors and said other electrical conductor comprises:

providing a predetermined current to the pair of electrical conductors; and

measuring a voltage through said pair of electrical conductors corresponding to said predetermined current.

17. The method as claimed in claim 13 wherein the step of determining a resistance between said at least one of said pair of electrical conductors and said other electrical conductor comprises:

providing a predetermined voltage to the pair of electrical conductors; and

measuring a current through said pair of electrical conductors corresponding to said predetermined voltage.

67,200-617
2001-0036

18. A method for determining existence and location of a fluid leak from a vessel comprising:

providing a pair of electrical conductors in proximity to said vessel, at least one of said electrical conductors being elongate and having a sheath comprising an electrically insulative, porous material;

providing one of a predetermined voltage and current to said pair of electrical conductors;

measuring the other one of a voltage and current not provided to said pair of electrical conductors;

determining from said provided one of a predetermined voltage and current and said measured other one of voltage and current not provided the existence and location of a fluid induced electrical short between said pair of conductors.

19. The method as claimed in claim 18 wherein the step of determining the existence and location of a fluid induced electrical short between said pair of conductors comprises measuring a resistance.

67,200-617
2001-0036

20. The method as claimed in claim 19 wherein the resistance is measured with an ohmmeter.

21. The method as claimed in claim 18 wherein the step of determining the existence and location of a fluid induced electrical short between said pair of conductors comprises the use of one of a personal computer, programmable logic controller, and embedded processor.